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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/545,072	04/07/2000	Yun Lin	00786/368002	9768

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EXAMINER
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KUBELIK, ANNE R

ART UNIT	PAPER NUMBER
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1638

DATE MAILED: 12/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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**Office Action Summary****Application No.**

09/545,072

**Applicant(s)**

LIN ET AL.

**Examiner**

Anne R. Kubelik

**Art Unit**

1638

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 October 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-8 and 10-39 is/are pending in the application.
- 4a) Of the above claim(s) 27-39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-8 and 10-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 November 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 30 June 2003 has been entered.
2. The amendments to the filed 14 October 2003 have been entered. Claims 1, 3-8 and 10-39 are pending. Claims 27-39 are withdrawn from consideration as being drawn to non-elected inventions. The restriction between claim 14 and the elected group is withdrawn. Claims 1, 3-8 and 10-26 are examined.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. The rejection of claim 21 under 35 U.S.C. 102(b) as being clearly anticipated by Akama et al is withdrawn in light of Applicant's amendments to the claim.

### ***Claim Objections***

5. Claims 16, 22 and 25-26 are objected to because of the following informalities:

There is an improper article before at the end of line 1 in claim 16.

In claims 22 and 25-26, line 1, there is an improper article before the first "transgenic".

*Claim Rejections - 35 USC § 112*

6. Claims 1, 3-8, 10-13 and 15-22 remain rejected and claim 14 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for nucleic acids that encode SEQ ID NO:2, does not reasonably provide enablement for nucleic acids that encode SSE proteins with 70% identity to SEQ ID NO:2. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims. The rejection is repeated for the reasons of record as set forth in the Office action mailed 21 May 2002, as applied to claims 1, 3-13 and 15-22. Applicant's arguments filed 30 June 2003 have been fully considered but they are not persuasive.

Applicant urges that the scope of the claims are now limited to highly homologous sequences, which are necessarily limited to the disclosed sequences. Applicant urges that with recitation of 70% identity to SEQ ID NO:2 and with the hybridization conditions recited there would be no undue trial and error experimentation to identify nucleic acids encompassed by the claims (response pg 7).

This is not found persuasive because the specification does not teach the sequence of any nucleic acids encoding proteins with 70% identity to SEQ ID NO:2. Furthermore, the claims do not recite the hybridization and wash times and the specification does not teach in what organisms nucleic acids that will hybridize to SEQ ID NO:1 under the recited conditions can be found.

Art Unit: 1638

7. Claims 23-26 remain rejected under 35 U.S.C. 112, first paragraph, as containing subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The rejection is repeated for the reasons of record as set forth in the Office action mailed 21 May 2002. Applicant's arguments filed 30 June 2003 have been fully considered but they are not persuasive.

Applicant urges that the scope of the claims are now limited to highly homologous sequences, which are necessarily limited to the disclosed sequences. Applicant urges that with recitation of 70% identity to SEQ ID NO:2 and with the hybridization conditions recited there would be no undue trial and error experimentation to identify nucleic acids encompassed by the claims (response pg 7).

This is not found persuasive because the previously cited references teach the many conditions in which antisense technology does not work. For example, as discussed in the prior Office action, Colliver et al showed that transformation of bird's foot trefoil with a construct that was antisense to bean chalcone synthase resulted in transformants with *increased* levels of chalcone synthase transcripts (pg 519, left column, paragraph 2) and note other instances when this phenomenon has occurred (pg 519, right column, paragraph 1).

Applicant is invited to submit a declaration presenting data that show that antisense suppression of SSE in *Arabidopsis* and any other plant, using the gene of the instant invention, was successful in producing stress-resistant plants.

8. Claims 1, 3-8, 10-13 and 15-26 remain rejected and claim 14 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter that was not described in the

Art Unit: 1638

specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The rejection is repeated for the reasons of record as set forth in the Office action mailed 21 May 2002, as applied to claims 1, 3-13 and 15-26. Applicant's arguments filed 30 June 2003 have been fully considered but they are not persuasive.

Applicant urges that the specification provides an adequate written description of the nucleic acids required for use in the claimed method (response pg 7).

This is not found persuasive because no function is recited for the encoded protein. Thus the functional portion of the written description for the claimed nucleic acid is lacking. Additionally, the specification does not describe the sequence of any nucleic acids encoding proteins with 70% identity to SEQ ID NO:2.

9. Claims 3-8, 10-13 and 15-26 remain rejected and claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention. Dependent claims are included in the rejection. The rejection is modified from the rejection set forth in the Office action mailed 21 May 2002, as applied to claims 1, 3-13 and 15-26 due to amendment of the claims. Applicant's arguments filed 30 June 2003 have been fully considered but they are not persuasive.

Claims 8 and 23 are indefinite because they do not recite hybridization and wash times.

Art Unit: 1638

Applicant urges that concern that hybridization and wash times are not recited is unwarranted because a determination of such times involves the application of well known and routine methods and those skilled in the art would understand these methods (response pg 8).

This is not found persuasive because hybridization and wash times affect what hybridizes and thus what is encompassed in the claimed invention. Without recitation of hybridization and wash times the metes and bounds of the claimed nucleic acid and vector are unclear.

The following rejections are new:

Claim 3 is indefinite for its recitation of “modifies”. The nature and extent of that modification is unclear.

Claims 4-6 are indefinite in their recitation of “facilitates”. The nature and extent of that facilitation is unclear.

Claim 8 lacks antecedent basis for the limitation “the nucleic acid molecule” in line 4.

It is unclear in claim 10, line 2, and claim 11, line 3, to which nucleic acid molecule in claim 8, the one in line 1 or the one in line 4, the phrase “the nucleic acid” molecule refers.

Claim 21 lacks antecedent basis for the limitation “the isolated nucleic acid” in line 2.

It is unclear in claim 25 if the seed comprises the vector.

### ***Claim Rejections - 35 USC § 102***

10. Claims 8 and 11-12 remain rejected and claim 14 is rejected under 35 U.S.C. 102(b) as being anticipated by Storozhenko et al (1996, FEBS Lett. 390:113-118). The rejection is repeated for the reasons of record as set forth in the Office action mailed 21 May 2002, as

Art Unit: 1638

applied to claims 8 and 11-12. Applicant's arguments filed 30 June 2003 have been fully considered but they are not persuasive.

Applicant urges that the claims now require that the protein have at least 70% identity to SEQ ID NO:2 (response pg 8).

This is not found persuasive because the claims do not so require that the protein have at least 70% identity to SEQ ID NO:2, only that they hybridize to SEQ ID NO:1 under the claims conditions. As hybridization and wash times are not recited, the nucleic acid of Storozhenko et al would hybridize to SEQ ID NO:1.

11. Claims 23-26 remain rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al (1996, Mol. Gen. Genet. 252:11-19). The rejection is repeated for the reasons of record as set forth in the Office action mailed 21 May 2002. Applicant's arguments filed 30 June 2003 have been fully considered but they are not persuasive.

Applicant urges that the claims now require that the protein have at least 30% identity to SEQ ID NO:2 (response pg 8).

This is not found persuasive because the claims do not so require that the protein have at least 30% identity to SEQ ID NO:2, only that they hybridize to SEQ ID NO:1 under the claims conditions. As hybridization and wash times are not recited, the vector of Lee et al would hybridize to SEQ ID NO:1.

#### ***Claim Rejections - 35 USC § 103***

12. Claims 8, 10-13, 15-19 and 21-26 are rejected and claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al in view of Storozhenko et al. The rejection is



Art Unit: 1638

repeated for the reasons of record as set forth in the Office action mailed 21 May 2002, as applied to claims 8, 10-13, 15-19 and 21-26. Applicant's arguments filed 30 June 2003 have been fully considered but they are not persuasive.

Applicant urges that the claims are now directed to subject matter that has been deemed free of the prior art (response pg 9).

This is not found persuasive because the claims do not so require that the protein have at least 70% identity to SEQ ID NO:2, only that they hybridize to SEQ ID NO:1 under the claims conditions. As hybridization and wash times are not recited, the nucleic acids and vectors of Lee et al in view of Storozhenko et al would hybridize to SEQ ID NO:1 and the claimed cells, plants, and seeds are taught by Lee et al in view of Storozhenko et al.

13. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al in view of Storozhenko et al as applied to claims 8, 10-19 and 21-26 above, and further in view of Gordon-Kamm et al.

The claims are drawn to monocots transformed with a nucleic acid that hybridizes to SEQ ID NO:1.

The teachings of Lee et al in view of Storozhenko et al is discussed above. Lee et al in view of Storozhenko et al do not teach monocots transformed with the nucleic acid.

Gordon-Kamm et al teach transformation of maize and regeneration into plants (see entire document).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to transform *Arabidopsis* plants with the nucleic acids taught by Lee et al in view of Storozhenko et al, and to modify that to transform the construct into maize plants as taught by

Art Unit: 1638

Gordon-Kamm et al. One of ordinary skill in the art would have been motivated to do so because antisense expression in a plant species of a gene from that species is a common method for further understanding the mechanisms of action of heat shock protein genes.

14. Claims 1 and 3-7 are free of the prior art, given the failure of the prior art to teach or suggest an isolated nucleic acid encoding an SSE polypeptide with at least 70% identity to SEQ ID NO:2.

### *Conclusion*

15. No claim is allowed.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anne R. Kubelik, whose telephone number is (703) 308-5059. The examiner can normally be reached Monday through Friday, 8:30 am - 5:00 pm. Sometime in January 2004, the examiner's phone number will change to 571-272-0801.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Nelson, can be reached at (703) 306-3218. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to Customer Service at (703) 308-0198.

Anne R. Kubelik, Ph.D.  
December 22, 2003

